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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,515	09/17/2001	Hyung-Chul Choi	M0023/7000D	9063

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BOSTON, MA 02109-1808

EXAMINER

HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/954,515

Applicant(s)

CHOI ET AL.

Examiner

Sow-Fun Hon

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

#### ***Specification***

1. After careful consideration of Applicant's clarification in the response filed 03/08/04, and page 8 of the specification, the amendment dated 03/29/04 was entered. It appears that the error was made in the original specification, in the statement that the high index top layer has a conductivity of at least 400 ohms/square. Ohm/square is actually a unit of sheet resistance, the inverse of conductivity. The specification should state that the high index top layer has *a sheet resistance of less than* 400 ohms/square, as properly understood by one of ordinary skill in the art at the time the invention was made. When the term "sheet resistance" is substituted for the term "conductivity" in claim 18, substantial conductivity of the high index top layer is indeed possible as stated in the specification (page 8, lines 1-4), providing support for the limitation in the amendment dated 03/29/04, "conductivity ranging from about 100 ohms/square to about 400 ohms/square". If Applicant insists on using the term "conductivity" in lieu of "sheet resistance" because the rest of the specification has been written in accordance with the term "conductivity", the specification should then be corrected to state that the high index "top layer has a conductivity of *less than* 400 ohms/square, and desirably from about 100 to about 200 ohms/square, gives satisfactory results" (page 8, lines 5-10).

#### ***Withdrawn Rejections***

2. The 35 U.S.C. 103(a) rejections have been withdrawn due to Applicant's amendment dated 10/15/04.

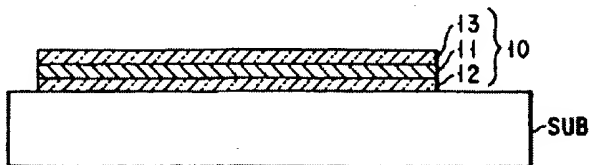
*New Rejections**Claim Rejections - 35 USC § 103*

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 18-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi et al. (US 5,667,853).

Regarding claim 18, Fukuyoshi has an electrode assembly (multilayered conductive film), in Fig. 1 below, comprising a substrate (SUB); a first transparent oxide layer 12 formed on the substrate; a silver-based metallic layer 11 formed on transparent oxide layer 12; and a second transparent layer 13 formed on the conductive layer 11 (column 4, lines 20-30). The silver layer 11 is conductive (column 5, lines 55-60). Layers 12 and 13 are high refractive index layers (column 12, lines 1-10).

Fukuyoshi teaches that the resist film of the predetermined electrode pattern is formed on the transparent oxide layer 13, and that the electrode pattern is etched with the three thin layers aligned with each other, forming transparent multilayered conductive films of electrodes (not plural, column 13, lines 45-55). Hence at least the top transparent oxide layer 13 and the conductive layer 11 are patterned so as to divide the conductive layer into a plurality of discrete electrodes.



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Fukuyoshi teaches that the top transparent oxide layer 13, in Fig. 2 above, has a thickness of 30 to 100 nm (column 5, lines 25-30), which overlaps the claimed range of about 20 nm to about 100 nm.

Fukuyoshi fails to teach that the indium tin oxide high index top layer 13, has a conductivity ranging from about 100 ohms/square to about 400 ohms/square.

CERAC teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity (in Applicant's terminology) or sheet resistance of greater than 100 ohms/square in order to obtain visible region transmission near 90 % (Film Properties section). An application is for electrodes (Introduction section).

Therefore it would have been the result of routine experimentation for one of ordinary skill in the art at the time the invention was made, to have used indium tin oxide with a conductivity ranging from about 100 ohms/square to about 400 ohms/square as the indium tin oxide high index top layer of Fukuyoshi, in order to obtain a conductive electrode with high transmission in the visible light region, as taught by CERAC.

Regarding claim 19, Fukuyoshi teaches a chip for driving the device formed overlying (on) a portion of the electrode (column 10, lines 25-35). Contacts, which are conductors, are needed to connect the electrodes to the chip. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a plurality of conductors connected to portions of the top layer overlying the discrete electrodes, in order to provide electrical contacts connecting the electrodes to the chip.

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Regarding claim 20, Fukuyoshi teaches a set of electrodes 34 that is adjacent to the screen (observer)-side substrate 31 in Fig. 3 (column 9, lines 14-24). The layer that is adjacent to the substrate with the potential of contacting the observer would need to be electrically insulating so as not to shock the observer.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made the high index layer 12, which is adjacent to the screen-side substrate, an electrically insulating one.

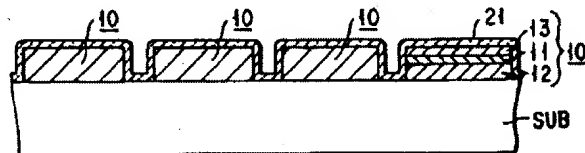
Regarding claim 21, Fukuyoshi et al. teaches that the substrate is a synthetic resin (plastic) material (column 9, lines 40-50).

Regarding claims 22, 24, Fukuyoshi teaches that the high index top transparent oxide layer 13 comprises primarily indium oxide (column 6, lines 60-65) and a small amount of tin oxide (forming indium tin oxide), titanium (di)oxide or gallium oxide to adjust the conductivity (column 7, lines 20-30).

Regarding claim 23, Fukuyoshi teaches that the conductive layer 11 comprises silver and gold (column 5, lines 45-55) which form an alloy.

Claim 24 has been discussed above.

Regarding claim 25, Fukuyoshi teaches a coating layer 21 of silicon oxide (column 8, lines 40-41). Fig. 2 below shows that it is disposed on at least one surface of the substrate SUB.



F I G. 2

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Regarding claim 26, Fukuyoshi teaches a liquid crystal display assembly comprising a liquid crystal material LC sandwiched (column 9, lines 49-50) between two electrode assemblies 42 and 34 in Fig. 3 (column 9, lines 35-40).

Regarding claim 27, although Fukuyoshi fails to teach that the liquid crystal display screen (column 21, lines 20-25) is a touch screen-type, touch screen displays are notoriously well known to one of ordinary skill in the art at the time the invention was made.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi as applied to claims 18-27 above, and further in view of Yatabe et al. (US 4,234,654).

Fukuyoshi teaches that the substrate is a synthetic resin (plastic) material (column 9, lines 40-50), but fails to specify the species.

Yatabe teaches a conductive laminate used as a transparent electrode structure for a liquid crystal display (column 9, lines 20-30). The substrate material may be polycarbonate, or polyacrylate (acrylic resin) (column 7, lines 55-65). Hence the claimed substrate materials are notoriously well known as substrates for electrode assemblies. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used polycarbonate or polyacrylate as materials for the substrate in the electrode assembly of Fukuyoshi, as demonstrated by Yatabe.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

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***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications



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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*S. Hon*

Sow-Fun Hon

*12/30/04*

*[Signature]*  
HAROLD PYON  
SUPERVISORY PATENT EXAMINER  
*1772*

*1/5/05*